

## **REMARKS**

Claims 1-35 were considered by the Examiner. Claims 1-35 stand rejected by the Examiner. Claims 1-35 are pending, and are believed to be allowable over the references cited by the Examiner as discussed below.

### **Claim Rejections under 35 USC Sec. 103**

Claims 1-2, 4-6, 9-11, 13, 15-17, 20-22, 24, and 26-32 stand rejected under 35 U.S.C. 103(a) as being anticipated by Weigand (USPN 6,850,617) in view of Feltstrom et al. (PGPUB 2002/0090078) and in further view of Michasclis (PGPUB 2004/0174989).

#### **Claim 1**

1. (original) A voice activity detect (VAD) method for detecting voice activity in communications signals, comprising the steps of:

determining an average noise energy level of the communications signals based on noise energy amplitude during periods of no voice activity;

converting the average noise energy level to sidetone attenuation, the sidetone attenuation increasing with increased noise energy level;

generating a VAD threshold based at least in part on the sidetone attenuation; and

performing VAD based on the generated VAD threshold.

Independent claim 1 recites a voice activity detect (VAD) method that generally includes determining an average noise energy level of the communications signals based on noise energy amplitude during periods of no voice activity, converting the average noise energy level to sidetone attenuation that increases with increased noise energy level, *generating a VAD*

*threshold based at least in part on the sidetone attenuation, and performing VAD based on the generated VAD threshold.* Generating adaptive VAD thresholds based in part on the sidetone attenuation are discussed in the Specification, for example, at paragraphs [0022] and [0035].

Applicant respectfully submits that Weigand, Felstrom, and Michaelis, either alone or in combination, do not teach *generating* a VAD threshold, let alone *generating* a VAD threshold *based at least in part on the sidetone attenuation.*

In the current Office Action on page 4, Examiner states that Michaelis at paragraphs [0042]-[0043] discloses a method of generating a VAD threshold based at least in part on the sidetone attenuation to provide a variable sidetone signal. Examiner appears to be reading the threshold (32) and threshold (34) taught by Michaelis onto the VAD threshold taught by claim 1. See Examiner Response to Arguments, current Office Action at page 2.

However, Michaelis at paragraphs [0042]-[0043] merely teaches that the sidetone amplitude generated by the Michaelis sidetone system 130 is adjusted based on the measured amplitude level of the subscriber's speech. In particular, Michaelis teaches that the sidetone amplitude is adjusted in an exaggerated manner based on whether the measured amplitude level of speech is below a threshold 32 speech level or above a threshold 34 speech level. Thus, Applicant respectfully submits that Examiner's statement that "Michaelis teaches that a threshold is generated and the sidetone is measured based on this threshold" is incorrect. In Michaelis, it is the speech level that is measured and the sidetone amplitude that is generated.

Nowhere does Michaelis teach, suggest, or imply that threshold 32 or threshold 34 are generated or adjusted, let alone that they are generated or adjusted based at least in part on the sidetone attenuation.

Furthermore, Applicant respectfully submits that the threshold 32 speech level and threshold 34 speech level taught by Michaelis are not a "*VAD threshold*" as taught by claim 1. The ordinary and customary usage of the term VAD threshold, and as used in the Specification at paragraphs [0002] and [0003], is a threshold value to determine whether speech is present or not,

below which there is no speech and above which speech is present. Threshold 32 and threshold 34 are not used to determine whether speech is present or not, but whether the speech level is below or above a certain threshold level causing distortion. Thus, threshold 32 and threshold 34 are not a VAD threshold.

Furthermore, Applicant respectfully submits that Weigand, Felstrom, and Michaelis, either alone or in combination, do not teach performing VAD based on the generated VAD threshold as taught by claim 1. Examiner has not established a prima facie case of anticipation for this element.

Weigand discloses a telephone receiver circuit with sidetone signal generation controlled by voice activity detection by using a voice activity detector (VAD) to detect the presence of voice activity and dynamically adjust the sidetone signal generation to compensate for noisy environments by eliminating or reducing the sidetone signal in the absence of voice activity. As the Examiner stated previously, Weigand does not teach generating a VAD threshold. Office Action dated 4-9-08, page 3, lines 7-8.

Felstrom discloses a sidetone controller coupled to a side-tone amplifier, where the sidetone controller applies a set of amplifier parameters based on the detected energy of an uplink signal and a downlink signal. Felstrom does not generating a VAD threshold or that the value of the VAD threshold is dependent on the sidetone attenuation or generated in response to the generated sidetone attenuation.

Therefore, it is respectfully submitted that claim 1 is patentable over Weigand in view of Felstrom and in further view of Michaelis. Accordingly, Applicant respectfully requests the withdrawal of the rejection of claim 1.

Claims 2, 4-6, and 9-11

Claims 2, 4-6, and 9-11 are dependent on claim 1. Therefore, it is respectfully submitted that claims 2, 4-6, and 9-11 are patentable over Weigand in view of Felstrom and in further view

of Michaelis at least for the reasons stated above with respect to the patentability of claim 1.

Accordingly, Applicant respectfully requests the withdrawal of the rejection of claims 2, 4-6, and 9-11.

Claim 13

13. (original) A voice activity detect (VAD) system, comprising:

an *adaptive VAD threshold generator configured to generate a VAD threshold based at least in part on a sidetone attenuation*, the sidetone attenuation being based on an average ambient noise energy level determined from a noise energy amplitude during periods of no voice activity, the sidetone attenuation increasing with increased noise energy level; and

a comparator configured to compare received signals to the adaptive VAD threshold to determine existence of voice activity.

Independent claim 13 recites a VAD system generally including *an adaptive VAD threshold generator configured to generate a VAD threshold based at least in part on a sidetone attenuation*, the sidetone attenuation being based on an average ambient noise energy level determined from a noise energy amplitude during periods of no voice activity, the sidetone attenuation increasing with increased noise energy level and a comparator configured to compare received signals to the adaptive VAD threshold to determine existence of voice activity.

As is evident, the elements of independent claim 13 are similar to those discussed above with reference to claim 1, and the same or similar arguments apply to claim 13 and are not repeated for purposes of conciseness and clarity only. Therefore, it is respectfully submitted that claim 13 is patentable over Weigand in view of Feltstrom and in further view of Michaelis. Accordingly, Applicant respectfully requests the withdrawal of the rejection of claim 13.

Claims 15-17 and 20-22

Claims 15-17 and 20-22 are dependent on claim 13. Therefore, it is respectfully submitted that claims 15-17 and 20-22 are patentable over Weigand in view of Feltstrom and in further view of Michaelis at least for the reasons stated above with respect to the patentability of claim 13. Accordingly, Applicant respectfully requests the withdrawal of the rejection of claims 15-17 and 20-22.

Claim 24

24. A communications system, comprising:
- a microphone for receiving communications signals;
  - a voice activity detector *utilizing an adaptive VAD threshold*; and
  - an adaptive sidetone control in communication with the microphone and the voice activity detector, the sidetone control to adaptively control a sidetone level based on an average ambient noise energy level determined from a noise energy amplitude during periods of no voice activity as determined by the voice activity detector, the adaptive sidetone control being configured to adaptively increase attenuation of the sidetone level with increased ambient noise level, *wherein the adaptive VAD threshold is generated at least in part on the sidetone level.*

Independent claim 24 recites a communications system that generally includes a microphone for receiving communications signals, a voice activity detector *utilizing an adaptive VAD threshold*, and an adaptive sidetone control in communication with the microphone and the voice activity detector, the sidetone control to adaptively control a sidetone level based on an average ambient noise energy level determined from a noise energy amplitude during periods of no voice activity as determined by the voice activity detector, the adaptive sidetone control being configured to adaptively increase attenuation of the sidetone level with increased ambient noise level, *wherein the adaptive VAD threshold is generated at least in part on the sidetone level.*

As is evident, the elements of independent claim 24 are similar to those discussed above with reference to claim 1, and the same or similar arguments apply to claim 24 and are not

repeated for purposes of conciseness and clarity only. Therefore, it is respectfully submitted that claim 24 is patentable over Weigand in view of Feltstrom and in further view of Michaelis. Accordingly, Applicant respectfully requests the withdrawal of the rejection of claim 24.

Claims 26-32

Claims 26-32 are dependent on claim 24. Therefore, it is respectfully submitted that claims 26-32 are patentable over Weigand in view of Feltstrom and in further view of Michaelis at least for the reasons stated above with respect to the patentability of claim 24. Accordingly, Applicant respectfully requests the withdrawal of the rejection of claims 26-32.

Claims 3, 7, 8, 12, 14, 18, 19, 23, 25, and 33-35.

Claims 3, 7, 8, 12, 14, 18, 19, 23, 25, and 33-35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Weigand in view of Feltstrom and in further view of Michaelis and further in view of Hollier.

However, because claims 3, 7, 8, 12, 14, 18, 19, 23, 25, and 33-35 are dependent variously from independent claims 1, 13, and 24, claims 3, 7, 8, 12, 14, 18, 19, 23, 25, and 33-35 are also believed to be allowable for at least similar reasons as those discussed above. Withdrawal of the rejection of claims 3, 7, 8, 12, 14, 18, 19, 23, 25, and 33-35 under 35 U.S.C. §103(a) is respectfully requested

### CONCLUSION

In view of the above amendments and remarks, allowance of the pending claims is respectfully requested.

Respectfully submitted,

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